UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

UNITED STATES OF AMERICA,	)	
	)	
Plaintiff,	)	
	)	
vs.	)	
	)	
HASSAN RAFLE,	)	**Cause No. 1:11-cr-15-WTL-KPF-7**
	)	
JAMA MIRE,	)	**Cause No. 1:11-cr-15-WTL-KPF-8**
	)	
and	)	
	)	**Cause No. 1:11-cr-17-WTL-KPF-5**
LIBAN ABDIRAHMAN	)	
	)	
Defendants.	)	
	)	

SUPPLEMENTAL ENTRY ON DEFENDANTS' *DAUBERT* CHALLENGE TO EXPERT EVIDENCE

Before the Court is the Defendants' Motion to Exclude the Government's Expert Testimony of Theresa B. Browning and Luke M. Augustine. A hearing on the matter was held March 19, 2012, and the Court, being duly advised, **DENIED** the motion (see docket #417 in 1:11-cr-15-WTL-KPF; #227 in 1:11-cr-17-WTL-KPF). The Court now sets forth the following findings and conclusions.

I. STANDARD

Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993), established the standard for determining the admissibility of scientific evidence and the Federal Rules of Evidence were thereafter amended to reflect the law as set forth in *Daubert*. Federal Rule of Evidence 702 provides: "A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the

expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case." In other words, the testimony must be relevant and reliable. *United States v. Allen*, 390 F.3d 944, 949 (7th Cir. 2004). "The proponent of the expert bears the burden of demonstrating that the expert's testimony would satisfy the *Daubert* standard." *Lewis v. CITGO Petroleum Corp.*, 561 F.3d 698, 705 (7th Cir. 2009).

The Supreme Court has identified several factors used to evaluate the reliability of principles and methods: (1) whether the theory or technique can be or has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known and potential rate for error; and (4) the "general acceptance" of the theory. *Bradley v. Brown*, 42 F.3d 434, 437 (7th Cir. 1994) (citing *Daubert*, 509 U.S. at 592-94). This is not a rigid test, however, as the applicability of these factors depends on the particular facts and circumstances of each case. *United States v. Cruz-Velasco*, 224 F.3d 654, 660 (7th Cir. 2000).

II. BACKGROUND

The Government seeks criminal convictions of the Defendants for crimes related to the drug known as cathinone. Cathinone is a Schedule I controlled substance sometimes present in the plant *catha edulis*, also known as khat. It is the khat plant itself that was seized by law enforcement from some of the Defendants. When present, cathinone is detected in the plant through chemical analysis.

According to the scientific literature, cathinone is present in the young, still-growing

parts of the khat plant. Once the plant is harvested, cathinone begins to convert into a substance known as cathine, itself a Schedule IV controlled substance. The rate at which cathinone converts to cathine, and the methods effective for preserving cathinone in the harvested plant, are disputed by the scientific community. Cathinone, and to a lesser extent, cathine, provide the desired stimulating effects prized by khat users.

On April 21, 2011, the Government filed its first Notice Regarding Expert Witnesses, in which it disclosed to the Defendants that the Government

> intends to call forensic chemists who inspected substances submitted for inspection. The forensic chemists will testify to the analysis and examinations performed and will detail the laboratory examination reports as previously tendered in discovery and those that will be received.

The Government later supplemented its notice with the specific names and biographical information of certain forensic chemists, including Theresa B. Browning and Luke M. Augustine.

Co-defendant Abdikadar Hodan filed a motion to exclude the Government's Expert Testimony of Theresa B. Browning and Luke M. Augustine on August 4, 2011. Hodan's motion seeks the exclusion of "any and all data and testimony referring to or resulting from the procedure used to test the substance known as 'khat' in the U.S. Department of Justice Drug Enforcement Administration Case Number 415B-IP-97748." Mire originally filed a notice to join Hodan's motion in August 12, 2011. Hodan pled guilty to the charges against him on September 1, 2011, rendering Hodan's original *Daubert* motion moot. By invitation of the Court, Mire moved to reinstate the motion and treat it as if Mire had filed it. By court orders, Mire joined Hodan's motion on October 7, 2011, Rafle joined the motion on March 12, 2012, and Abdirahman joined the motion March 20, 2012.

This Court held a *Daubert* hearing on March 19, 2012. The Government called Dr. John Chappell, a forensic drug chemist with the Drug Enforcement Administration for nearly twenty years, who testified to the procedures and methods used to analyze khat for the presence of cathinone. The Defendants called Dr. Daniel McCoy, a toxicologist for over thirty years, who testified that the tests were inadequate because they did not include a limit of detection or a quantitative component.

II. DISCUSSION

As the First Circuit has observed, there is more than one way to skin a khat. *United States v. Hussein*, 351 F.3d 9, 18 (1st Cir. 2003). There are different methods of analyzing organic substances for the presence of a controlled substance, different instruments that employ these methods, different controls that must be run to assure the validity of those tests, and different measurements of the resulting data. In this case, the proposed experts' testimony regarding the substances identified in the seized khat is based on analysis of plant material through a process called gas chromatography-mass spectrometry ("GCMS"), which yields a qualitative result. According to Dr. Chappell, qualitative analysis involves detecting or collecting data that is distinctive for a particular substance and ruling out the possibility of any other substance being present. Chemists performing an analysis using GCMS compare the chromatogram readout from the test with the known chromatogram for a certain substance and, by analyzing the peaks, identify whether that substance is present. Qualitative analysis employs "negative controls" to ascertain that there is no independent source of contamination in the preparation of the sample for analysis. The normal protocol for negative controls, according to Dr. Chappell, is for the "blank" (the preparation materials without the added plant material to be tested) to be examined

first by the testing instrument. Running the blank and receiving a negative reading establishes that neither the instrument nor the preparation materials are producing a positive reading for a substance not actually present. If the blank yields such a "false positive," the analysis of the sample is invalidated.

The Defendants contend that, because the testing methods used do not include a limit of detection, the factual basis for the results is insufficient. "Limit of detection" refers to the smallest concentration or amount of a substance that can be reliably detected to determine that the substance is indeed present. However, Dr. Chappell clearly explained that the limit of detection, while used in toxicology, is not generally applied in forensic drug analysis. Drug analysis involves much simpler mixtures, as opposed to toxicology, which involves bodily fluids like blood or urine, which are very complex samples and also typically have very low concentrations of drug substances. In contrast, drug analysis deals with materials that are usually more concentrated and, furthermore, the drug analyst is not limited as to the amount of material that can be used in an analysis. Drug analysts are usually free to take as large a sample size as is necessary to confidently determine the presence or absence of a controlled substance. Thus, the Government has shown that the absence of a limit of detection does not render the tests an insufficient basis for identification.

The Defendants also argue that the forensic chemist's testimony should be excluded because the forensic chemists only performed qualitative analysis. The lack of quantitative analysis, according to the Defendants, is a fatal flaw because the cathinone reported to exist in the seized khat may be so small in amount that a chewer of the plant would not experience the desired stimulant effects. While this may be true, the amount of cathinone present is not an

element of the offense. The agency rule including cathinone in Schedule I includes "any material compound, mixture, or preparation which contains *any quantity* of the following substances having a stimulant effect on the central nervous system." 21 C.F.R. 1308.11(f) (emphasis added). In addition, 21 U.S.C. § 841(a)(1) prohibits knowing or intentional possession of a controlled substance with intent to manufacture, distribute, or dispense. "Clearly, a person possesses a controlled substance whether it be a trace or a pound." *United States v. Jeffers*, 524 F.2d 253, 257 (7th Cir. 1975). Moreover, Dr. Chappell testified that quantitative analysis is not required to identify the presence of cathinone. For these reasons, the Government has demonstrated that qualitative analysis identifying the presence of a controlled substance is not scientifically incomplete.

IV. CONCLUSION

If a court concludes "that there is simply too great an analytical gap between the data and the opinion offered," it may exclude an expert's testimony. *General Electric Co. v. Joiner*, 522 U.S. 136, 146 (1997). There is no such gap in this case. The Court is satisfied that the testimony of chemists Luke M. Augustine and Theresa B. Browning meets the standard set forth in *Daubert*. For the foregoing reasons, the Defendants' Motion is **DENIED**.

SO ORDERED: 04/23/2012

William T Lawrence

Hon. William T. Lawrence, Judge
United States District Court
Southern District of Indiana

Copies to all counsel of record via electronic communication